Amendment to the Claims:

1. (Previously Presented) A diagnostic imaging system comprising:

a scanner for acquiring image data of an organ;

a reconstruction processor for reconstructing the image data into a three dimensional (3D) image representation of the organ;

a workstation including a memory which stores a plurality of 3D shape models and one or more processors which define a set of global tools and set of manual tools;

a user interface by which a user:

selects a 3D shape model of the organ from the workstation memory;

manipulates the set of global tools to fit the selected 3D shape model to the 3D image representation of the organ; and

manipulates the set of manual tools to modify selected regions of the selected 3D shape model to match corresponding regions of the 3D image representation of the organ.

2. (Previously Presented) The system as set forth in claim 1, wherein the selected 3D shape model is represented by an adaptive mesh including:

vertices and links which connect individual vertices, the set of manual tools deforming the mesh such that individual vertices are moved in accordance with a move of a mouse.

3. (Previously Presented) The system as set forth in claim 1, wherein the selected 3D shape model is represented by an adaptive mesh including vertices and the set of manual tools includes:

manual tools which are used by a user to manipulate the mesh to match the 3D image representation of the organ.

4. (Previously Presented) The system as set forth in claim 3, wherein the manual tools include:

a Gaussian pull tool which deforms a surface of the selected 3D shape model by pulling selected vertices along a predefined smooth curve.

5. (Original) The system as set forth in claim 4, wherein the predefined smooth curve is a Gaussian curve.

6. (Previously Presented) The system as set forth in claim 5, wherein the user interface controls a radius which defines a width of a Gaussian spread of the Gaussian curve.

7. (Previously Presented) The system as set forth in claim 6, wherein the user interface controls x- and y-radii of the Gaussian curve, wherein x-radius defines a width of the Gaussian spread in a direction of a move of a mouse and the y-radius defines a width of Gaussian spread in a direction which is orthogonal to the mouse move.

8. (Cancelled)

9. (Previously Presented) The system as set forth in claim 5, wherein the user interface controls include a mouse which pulls the vertices a distance from an initial position defined by the mouse to an end position defined by the mouse.

10. (Previously Presented) The system as set forth in claim 3, wherein the manual tools include:

a sphere tool which moves vertices located within a predefined radius of the sphere to a surface of the sphere.

11. (Cancelled)

12. (Previously Presented) The system as set forth in claim 3, wherein the manual tools include:

a pencil tool which deforms an original boundary of the selected 3D shape model to align the original boundary with a drawing path defined by a mouse.

13. (Cancelled)

14. (Previously Presented) The system as set forth in claim 1, wherein the set of global tools fits the selected 3D shape model by applying at least one of scaling, rotation, and translation to the selected 3D shape model as a whole.

15. (Previously Presented) The system as set forth in claim 1, wherein the selected 3D shape model is selected from an organ model database and wherein the user interface drags and drops the selected 3D shape model on 3D image representation of the organ.

16. (Cancelled)

17. (Previously Presented) A method of segmenting a image of a diagnostic imaging system, comprising:

acquiring image data of an object;

reconstructing the image data into a three dimensional (3D) image representation of the object;

dragging and dropping a selected 3D shape model on the 3D image representation of the object;

globally scaling, rotating and translating the selected 3D shape model to fit the selected 3D shape model globally to the 3D image representation of the object; and

deforming local regions of the selected 3D shape model with a set of manual tools to match the local regions of the selected 3D shape model to the 3D image representation of the object.

18. (Previously Presented) The method as set forth in claim 17, wherein the selected 3D shape model is represented by an adaptive mesh which includes vertices and links connecting individual vertices and the step of deforming the local regions includes:

selecting vertices to be deformed;

selecting a transformation algorithm to transform the selected vertices;

converting mouse motion into local deformation parameters; and

transforming the selected vertices in the selected 3D shape model by the local deformation parameters.

19. (Previously Presented) The method as set forth in claim 17, wherein the set of manual tools includes:

a Gaussian pull tool;

a Sphere push tool; and

a Pencil tool.

20. (Previously Presented) A method of preparing a radiation therapy plan comprising:

acquiring image data;

automatically segmenting the image data by selecting a best-fit model representative of one or more segmented structures in the image data;

applying manual shape-altering tools to the best-fit model such as to modify the model to conform to the image data;

using the modified segmented image data to form a radiation therapy plan.

21. (Previously Presented) The method of claim 20, wherein the modified model is saved as a potential best-fit model in future radiation therapy plans.

22. (Previously Presented) The method of claim 20, wherein the image data is a three dimensional image representation of an object.

23. (Previously Presented) The method of claim 20, wherein the best-fit model is represented by an adaptive mesh which includes vertices and links connecting individual vertices and the step of deforming includes:

selecting vertices to be deformed;

selecting a transformation algorithm to transform the selected vertices;

converting mouse motion into local deformation parameters; and

transforming the selected vertices in the best-fit model by the local deformation parameters.